

## Preface

Over the next decade, power plant operators may face significant requirements to reduce emissions of sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), carbon dioxide (CO<sub>2</sub>) and mercury (Hg). At present, neither the future reduction requirements nor the complete timetable is known for any of these airborne emissions, and compliance planning is difficult. Power plant operators are wary of making investments that could prove uneconomical if and when new regulations are enacted. An option that looks attractive to meet one set of SO<sub>2</sub> and NO<sub>x</sub> standards may not be attractive if further reductions are required in a few years. Similarly, economical options for reducing SO<sub>2</sub> and NO<sub>x</sub> may not be optimal if Hg and/or CO<sub>2</sub> emissions must also be reduced later.

Recently, some have proposed plans requiring coordinated multi-emission reductions. This analysis responds to a request from the Subcommittee on National Economic Growth, Natural Resources, and Regulatory Affairs of the U.S. House of Representatives Committee on Government Reform to examine the costs of such multi-emission reduction strategies (see Appendix J for the requesting letters). In its request the Subcommittee asked the Energy Information Administration (EIA) to “analyze the potential costs of various multi-pollutant strategies to reduce the air emissions from electric power plants.” The Subcommittee requested that EIA examine the impacts of cases (see Chapters 2 and 5 for descriptions of the cases) incorporating NO<sub>x</sub>, SO<sub>2</sub>, CO<sub>2</sub>, and Hg emission reduction requirements and renewable portfolio standard (RPS) requirements.

In response to the Subcommittee’s request, EIA has prepared this report as the first of two volumes. This report addresses NO<sub>x</sub>, SO<sub>2</sub>, and CO<sub>2</sub> emission reductions. The second volume will extend the analysis to Hg emission reductions and RPS requirements. The projections and quantitative analysis for this report were prepared using the National Energy Modeling System (NEMS), an energy-economy model of U.S. energy markets designed, developed, and maintained by EIA, which is used each year to provide projections for EIA’s *Annual Energy Outlook* and for other analyses and service reports. Chapter 1 of this report provides a brief introduction, Chapter 2 describes the analysis cases and methodology, Chapter 3 provides electricity market results, and Chapter 4 examines projections for coal, natural gas, and renewable fuels markets and for the U.S. macroeconomy. Chapter 5 examines the impacts of

alternative assumptions about the possible outcomes of ongoing litigation related to new source reviews, and Chapter 6 compares the results of this analysis with those of other analyses.

Within its Independent Expert Review Program, EIA arranged for leading experts in the fields of energy and economic analysis to review earlier versions of this analysis and provide comment. The reviewers provided comments on two draft versions of the report and discussed their comments in a joint meeting. All comments from the reviewers either have been incorporated or were thoroughly considered for incorporation. As is always the case when peer reviews are undertaken, not all the reviewers may be in agreement with all the methodology, inputs, and conclusions of the final report. The contents of the report are solely the responsibility of EIA. The assistance of the following reviewers in preparing the report is gratefully acknowledged:

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The projections in the reference case in this report are not statements of what will happen but of what might happen, given the assumptions and methodologies used. The reference case projections are business-as-usual trend forecasts, given known technology, technological and demographic trends, and current laws and regulations. Thus, they provide a policy-neutral reference

case that can be used to analyze policy initiatives. EIA does not propose, advocate, or speculate on future legislative and regulatory changes. All laws are assumed to remain as currently enacted; however, the impacts of emerging regulatory changes, when defined, are reflected.